

COOP'S TECHNOLOGY DIGEST

-A Timely Report on The World of Communications-

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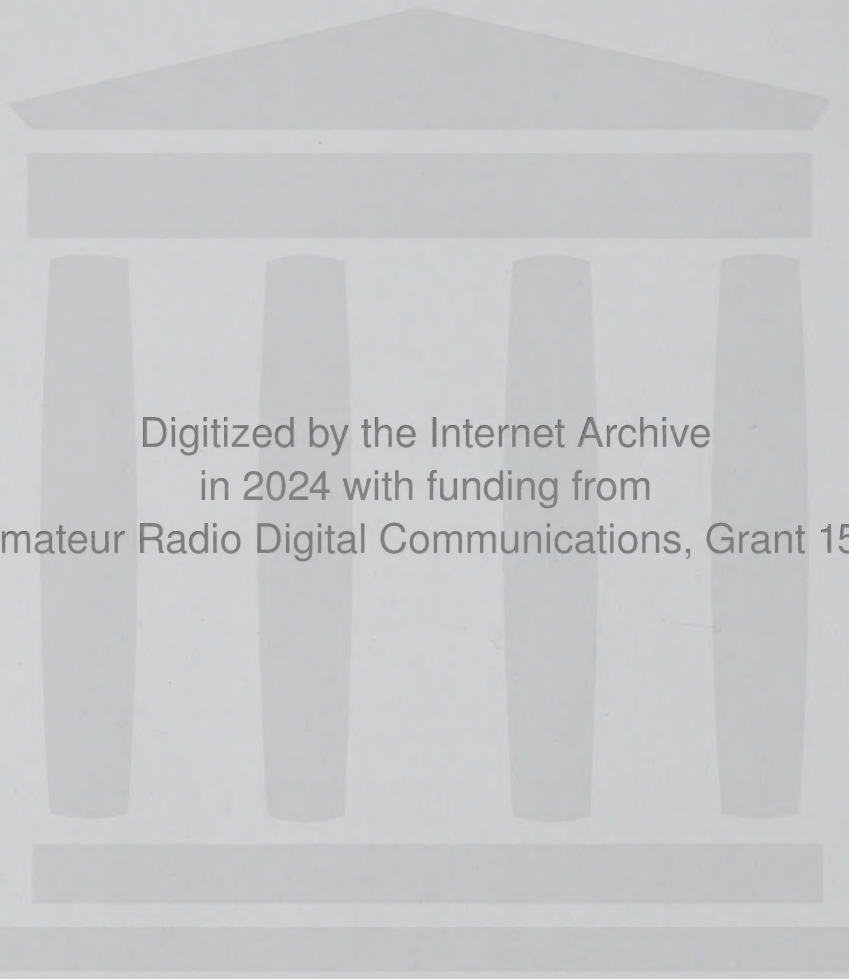
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Growth of ETHNIC Pacific Satellite Programming Availability

The successful launch of AsiaSat 3S on March 21 is changing the rules and potential for significantly greater programming availability to the Pacific (and Asia). As3S, now testing, is scheduled to permanently locate at 105.5E replacing As1 which is now nearing retirement at that location. The As3S coverage is far greater than As1, reaching into Australia and New Zealand as well as the central Pacific. In the past, only free to air programmers have been available from AsiaSat 2 for viewers in New Zealand and Australia. As3S changes all of the rules. For the first time, select Star TV Asia programming channels will be offered inside of Australia through an Australian firm. And, for the first time, a Korean firm will distribute television programming outside of its home country utilising the wide area coverage of As3S. Additional programming from India and Pakistan that is already operating from AsiaSat 1 will appear over a much larger area when AsiaSat 3S replaces As1.

The last 12 months have not been good for Asia or Pacific region pay TV programmers utilising satellite. First there was the financial collapse of Australia's Galaxy service (May 1998). This was followed by the near collapse of Indovision (Indonesia) and a tangled trail of losing its business relationship with Star TV Asia (which managed Indovision) just as Indovision was starting to move from a Palapa C-band satellite to a new purpose-built S-band satellite (Cakrawarta). Other pay-TV operations serving Malaysia and Taiwan ran into financial problems.

However, Australia's Austar (regional) pay TV service has grown faster than even its own generous predictions and New Zealand's Sky service has managed a very complex satellite launch with controlled difficulties. The Asia + Pacific satellite delivery pay-TV firms are now in a period of economic and technical adjustment brought on by revised expectations and in some instances a rapidly growing programme channel count. Reference one year ago - consumers now have more programme packages to select from (although seldom in a competitive environment) but they are now or will shortly be paying more money per month for their programming.

Australia

There are now two satellite delivery firms operating. Austar, the oldest, serves regional areas but does not offer its services inside of major city markets (Melbourne, Sydney, Perth et al). Austar claims more than 310,000 subscribers, presently offers several different programming layers that begin at A\$42.90 per month and work upwards to A\$64.75 per month. Foxtel (satellite) officially launched operation March 1 (1999) but in actual fact took over approximately 40,000 Galaxy subscribers last June when Galaxy failed. Foxtel fills in where Austar does not go - the major cities and a handful of regional markets such as Newcastle. Foxtel's satellite service is also offered in various layers starting at A\$56.95 per month and working upwards to A\$71.40 per month. Foxtel claims to be adding upwards of 8,000 new subscribers per month at this point, but the number is

As3S Testing - 98.2E

AsiaSat 3S arrived at its initial testing location, 98.2E, March 31. It was launched March 21.

Tests at 98.2E will be conducted to minimise interference to AsiaSat 2 located at 100.5E limiting hours of testing for those transponders which would clash with operations on next door neighbour As2. As3S is scheduled to move to 105.5E where it will slide in "behind" As1 which it is replacing "before the end of April." The present schedule calls for commercial operation by May 8th.

IN AUSTRALIA - Ethnic Satellite TV Services Now Available

Country	# Chs	# satellites	# FTA	# pay	A\$\$ per month	Avg cost of system	digital/ analogue	Also in NZ?	Notes
Brunei	1	1	1	0		A\$2,100	0/1	yes	
China	17	2+	17	0		A\$2,500	16/1	yes	
Egypt	1	1	1	0		A\$1,800	0/1	yes	
Filipino	2	1	1	1	\$25	A\$2,500	2/0	FTA only	
France	3	2	3	0		A\$2,300	2/1	yes	
Germany	1	1	1	0		A\$1,800	1/0	yes	
Greece	1	1	1(**)	0		A\$2,100	1/0	yes	
India	1(*)	1	0(*)	1	\$20	A\$2,500	1/(*)	(*)	
Indonesia	3	1	2	0		A\$1,800	0/2	yes	1 na
Italy	2	2	2(**)	0		A\$2,500	2/0	yes	
Japan	2	1	1	1	\$60	A\$3,000	2/0	yes	
Korea	1	1	1(*)	0		A\$2,100	0/1?	yes	
Laos	1	1	1	0		A\$2,000	1/0	yes	
Lebanon	2	1	2(**)	0		A\$2,100	2/0	yes	
Maldives	1	1	1	0		A\$2,000	1/0	no	
Myanmar	1	1	1	0		A\$2,000	1/0	no	
Myawady	1	1	1	0		A\$2,000	1/0	yes	
Nauru	1	1	1	0		A\$2,800	1/0	yes	
New Caledon'a	1(***)	1	1	0		A\$2,800	1/0	yes	
Pakistan	1(*)	1	1	0		A\$1,800	0/1	yes	
Portugal	1	1	1	0		A\$1,800	0/1	yes	
Russia	2	2	2	0		A\$2,100	0/2	1-yes	
Singap're	1	1	1	0		A\$2,000	1/0	yes	
Spain	1	1	1	0		A\$1,800	1/0	yes	
Taihiti	2	2	2	0		A\$2,800	2/0	yes	
Taiwan	10	1	0	10	\$100	A\$3,500	10/0	yes	
Thailand	3	1	3	0		A\$2,100	2/1	no	

* / Available after May 1st - see text. ** / While presently free to air, may not remain FTA. *** / New Caledonia RFO service scheduled to begin satellite delivery June-July 1999.

misleading since it built up a sizeable backlog of wanna-be customers between June and late February - a period during which it did no new installations. New customers are currently being given dates in mid to late June when they can expect their installations to be made.

Optus via satellite has been called off. Like Foxtel, it had intended to distribute a version of its cable television programming package via satellite. It was not a level playing field. Austar has been firmly established as the regional (read rural) satellite pay-TV operator for several years. Prior to Galaxy's failure and the assumption by Foxtel of the ex-Galaxy metropolitan region satellite subscribers, Austar and Galaxy shared programming channels and uplinking facilities to provide satellite to both the urban and rural markets. This left Optus as an urban cable operator, unwilling or unable to piece together a satellite programming package capable of competing with Foxtel. The

demise of Galaxy, reborn as Foxtel (satellite), and the termination of a satellite DTH package from Optus is viewed by many as rationalisation of the Australian pay-TV scene.

While Optus satellite was in limbo from May 1998 to their soft announcement to not proceed in February, the Optus cable platform was hardly attracting any new subscribers. The service now claims slightly more than 200,000 which compares unfavourably with competitor Foxtel (cable) and their claimed 385,000. Optus, clearly, would like to get out of the pay television business but cannot do so without some significant closing down costs. One major monthly recurring cost is for programming commitments it has made with Disney and others. By guaranteeing programmers minimum revenues against minimum subscriber bases, Optus is paying several times the intended per home cost per month - simply because it has never grown to the minimum subscriber numbers originally projected. If you guarantee \$2,000,000 per month for a service and project 500,000 subscribers taking the service - and then languish at 200,000 subscribers, the actual cost per home for the \$2,000,000 per month package is not \$4 per home but \$10 per home. Optus got itself into this money draining posture by over estimating - badly - their own subscriber growth. It has agreed to allow its three channel sport package and its three channel movie package to be added as an optional tier to Austar subscribers largely in an attempt to sell through these expensive services and bring up the number of users - which in turn will bring down the cost to Optus per home where guarantees are in place.

Ethnic Markets Melbourne has more Greek heritage residents than any other city outside of Greece. Victoria, the state, is one of the great multiethnic melting pots of the world. Blocks of flats numbering several hundred residences each house closely knit ethnic populations from Russia, the middle east, Asia. Entrepreneurs have installed one or two channel SMATV (satellite master antenna) systems in hundreds of these locations distributing for a modest fee per month television taken from satellite from a dozen or more countries.

In response, Foxtel and Optus cable and Foxtel satellite have recently reconfigured their programming packages to offer several ethnic TV channels. These Chinese, Italian, Lebanese, Greek and other channels sold via cable or satellite command large prices - typically A\$25 per month per channel. Previously, ethnic home satellite dish systems have been selling well throughout Australia but priced between A\$2,000 and A\$2,500, are not affordable by many immigrants. Ethnic dish systems have largely relied upon the free to air AsiaSat 2 services from members of the European Bouquet - a pair of French channels, on each Italian, German and Spanish - and - free to air government channels from Egypt and Portugal. For short periods of time, other free to air ethnic services have been available from India, Malaysia, Indonesia, the Philippines and even Chile (see table of currently available services, p. 3). Virtually all of the C-band DTH sales activity in Australia during the most recent 18 months has been tied to the availability of ethnic programming and a modest infrastructure of installing dealers has been created to service these people. Victoria has been especially active with "install it yourself" kits of equipment and step by step instructions luring the unwary to haul home two thousand dollar equipment packages. A considerable amount of animosity has been building in Victoria between those who sell "DIY" packages and the installing dealers who feel their bread and butter is being undercut by wholesalers only interested in moving hardware. Immigrants from Europe and the Middle East, where complete home dish systems sell for the equivalent of A\$1,000, have been quick to demand lower prices not realising that their European systems are for Ku-band (much smaller antennas, less complicated installations) and that C-band systems are bigger and simply cost more. The difference in price between a DIY and one installed by an installation professional is typically in the region of A\$500. This has not been a problem in New Zealand to date because wholesalers of satellite equipment are virtually non-existent here.

Australian installations often are "shared" between several families living in the same block of homes. This "co-operative" approach brings the cost per family down but with the do it yourself (DIY) approach has led to a number of incidents where dish antennas have fallen down from rooftops during windy weather. And this in turn has encouraged bureaucrats to clamp down on satellite antenna installation practices - a proposed Victoria wide regulation change will ban all dishes larger than 1.2m unless special (read expensive) permits are obtained in advance.

Ethnic Programme Reliability. While thousands of DIY and professionally installed terminals have been sold over the last 24 months in Australia, the potential has hardly been scratched. Two factors are cited by yet-to-buy customers.

Number one - The cost is too high and unless the terminal can be shared between several families, the purchase will not take place at present pricing levels.

Number two - The programming available has been unreliable.

It is the programme reliability aspect that is hurting sales the most. Services from Russia, for example, rely upon now badly aged Gorizont family satellites. The Russians have stopped building and launching these satellites, those still operating at very close to (or past) retirement age and reception grows progressively worse each month. The buyers know this, and want assurances the systems they purchase will still be able to receive Mother-Russia programming one, two or five years down the road. No such assurances can be given, in fact, quite the contrary is likely. Over the past four years, early adopters of home dish systems for ethnic reception have been badly hurt by failing satellite services. Two Indian services (RAJ-TV and ATN), once available over Australia, New Zealand the entire South Pacific, simply moved to new satellites which no longer reach our region anymore. This left behind several hundred - perhaps more - terminals which were purchased for a single purpose and are now quite useless to their owners. RFO Tahiti, still available in a digital format, left free to air analogue after more than a decade of service. Again, purpose-bought terminals were left without ongoing service. Greek, Italian, Lebanese programming currently available from PAS-2 in digital format constantly reminds viewers of the FTA service, "*We plan to encrypt - soon*" which acts as a deterrent to new dish sales. Egypt advises would-be viewers that it "*plans to convert to digital and to change to a pay TV service - soon.*" Again, terminal buyers are reluctant to invest - although Egypt and others have been threatening such a change for more than two years now and appear no closer to actually doing it today than they did two years ago.

On the other side of the coin, there are some services which are proud of their FTA status, backed by generous government grants. Spain, Germany, Portugal, France and Italy fall into this camp. However, both France and Italy are also interested in creating pay-TV packages for sale in the Pacific and Asia and each is working on the creation of international pay service which will augment their present FTA only services.

Between those who proudly will not convert to pay and those who say nothing committal about their intentions is a new breed that is just starting to appear. Star TV Asia, the Murdoch service that continues to lose money against all other Murdoch investment trends, has just announced its agreement to carve out of its May 1999 new service package a limited number of ethnic service channels which it will allow to be sold in Australia and elsewhere. An Australian company, Solution 42 Pty Ltd. (1) has signed a contract with Star TV to resell the Filipino action movie service VIVA! and the Star created Indian news service (Star News India) within Australia. These services are copyright controlled by Star TV, present no unmanageable licensing problems to the Murdoch empire, and will be receivable on dishes in the 2.3 metre region over all of Australia. Solution 42 purchases from Star TV Asia the currently available IRD (a Pace DVS-211, shortly to be replaced by a Zenith model similar to that used by Sky TV NZ) and acts as a subscription agent for the two services. The IRDs will sell through to Australian DTH installing dealers in the region of A\$1,200 and the programme services will sell on an annual basis: VIVA! at A\$300, Star News India at A\$240 (\$25 and \$20 per month equivalent). Solution 42 is promoting the services through ethnic newspapers and cultural clubs across Australia, is paying a sales commission of A\$100 and a flat installer fee of A\$50 as a part of the relationship with the sellers. Dealers will purchase the Star supplied IRD, and the companion smart card from Solution 42, add in their own antenna, mount, LNBF, cable and installation and determine the final selling price based upon dealer by dealer pricing economics.

What is especially unique about this is that Star TV Asia is the programmer, and that alone should go a long ways towards convincing consumers the services will be available to them for many years into the future. Both VIVA! and Star News Asia have been a part of the Star TV Asia programming

1/ Solution 42 Pty Ltd, Bill Kahn at tel (61)(0)2-9820-5962, fax (61)(0)2-9820-1769, Email specs@australia.net.au.

package for quite some time (VIVA! for three years, Star News Asia was launched 13 months ago). Solution 42 has previously been involved in assisting the Pacific region Seventh Day Adventist Church to get their network operational. The downside of this is that neither VIVA! nor Star News India can be sold outside of Australia at the present time.

Outreach Markets

Pay TV sales areas are governed almost entirely by programme licensing rights. Services such as TNT/Cartoons view Australia as one market, New Zealand as a separate market, Indonesia as a third and so on. Virtually all programmer contracts with service providers (such as Austar, Sky NZ, Indovision) specify limits on where their material can be resold. In the case of Austar (Foxtel), their coverage reach is determined by the footprint of the Optus B3 satellite. It happens that for all practical purposes the Optus satellite confines its signals to Australia proper. Similarly, the Sky NZ footprint is on a New Zealand beam of Optus B1 and there is very little opportunity for an economic receiving installation beyond New Zealand shores.

Ku band coverage has that unique ability to confine coverage to very tightly controlled areas. C-band coverage is more difficult to confine, and S-band coverage is almost impossible to hold to a single geographic region. Both C-band Star TV Asia and S-band Indovision therefore have a not insignificant user control problem created by the wide area coverage of their signals. For Star TV Asia to meet its programmer contract obligations, it must somehow ensure the two elements of a home DTH system that determine viewing ability do not leave their intended and licensed geographic area. Star TV to early April has been limited to India, the Philippines, Hong Kong and a handful of other closely identified locations (i.e., Macao). With the switch over to AsiaSat 3S from AsiaSat 1, Star TV faces new challenges; the new satellite will lift Star TV Asia programming into the entire Pacific region as well as into portions of Asia where it is not presently available.

To handle this new threat to controlling where the viewers are located, Star is bringing out a new digital receiver and smart card matching technique. Previously, it was possible to have the digital IRD in one location (such as Bombay - where it is legally available) but the easily trans-shipped card could be located far away in an unauthorised area (such as western Australia). The new technology "marries" the smart card to a specific IRD - when the card is first inserted into the IRD, it "shakes hands" with the IRD exchanging authorisation numbers. From that point onward, the smart card will only function when it is inserted in the IRD it was initially married with.

This makes it more difficult for the cards to "float" outside of the authorised regions. Now, the cards and the IRD must stay together for life. To back up this policy, Star has also instituted a system of having authorised Star appointed agents "drop in" unannounced on customer locations inside of the authorised regions. The agents check for the presence of both the IRD and the card, verify the two are working together. If either the IRD or the card (or both) are not present during the unannounced visit, the card is promptly turned off by the over the air data streams. And no matter where it actually happens to be located, the system no longer functions. (2)

Now it happens that while the AsiaSat 1 (and As2) Star TV Asia package of programming has been less than exciting, the new (with As3S) Star TV Asia package is being greatly expanded; 40 English language service channels by mid-year. There is even talk in Asia of adding a soft porn channel to the package. What this says is that under the coverage of As3S, Star TV Asia programming will be exceptionally desirable as a target for out-of-market consumers. And this is exactly the kind of "temptation" which attracts "hackers" (piracy card creators) to the marketplace. It will be of some interest to see how long it takes before unauthorised smart cards and companion IRDs are on offer throughout the Asia-Pacific region.

Star TV Asia's fortunes have been a US\$100 million dollar pit annually for half a decade. The service has never made money (contrary to all other Murdoch ownership position investments). The

2/ A similar system is employed by Murdoch's BSkyB in the UK, with one step higher technology. In the UK, the IRDs are only installed when their telephone modem jack is connected to a telephone at the subscriber's location. BSkyB is thus able to dial up the IRD at any time to check on its functions and by comparing the IRD secret serial number, the smart card's number and the known to BSkyB telephone number location of the equipment, the proper location of the system can be verified in seconds.

launch of As3S is providing the service with a new marketing opportunity and part of this is reflected by the recent decision to allow at least two channels (initially - more are likely before the end of 1999) into markets such as Australia (the VIVA! and Star News India packages previously reported; see p. 5). One of the accepted risks that goes with the opening of Australia for VIVA! and Star News India is that Star authorised IRDs will now be available to Australians and the only thing that prevents Australians from also tuning in the "other" 38 channels inside of the same bouquet is the technology of the smart card. It follows that at least some of the early VIVA! and Star News India packages sold in Australia will end up in the hands of wanna-be pirates who covet the IRD and card for their ability to unlock the balance of the Star TV Asia service. CTD will be monitoring this and reporting here.

Indovision is quite another situation. As CTD goes to press, this service lists more than 60 programme channels available - although 38 are actually functional. The Indovision S-band coverage from the purpose built Cakrawarta satellite (107.1E) as defined by the Indonesians primarily covers Indonesia. In fact, it covers far more of the region and tests conducted by observers for our sister publication SatFACTS Monthly show Indovision is sufficiently strong throughout much of the Pacific to be easily received with modest sized antennas (see table below).

Indovision was widely believed to be out of business as recently as December. Prior to mid-December, the firm was managed by Star TV Asia which brought with it certain skills in handling programmer sources and the proper selection of hardware. Without notice, Star TV shut down most of the Indovision (then) C-band service feeds through Palapa C2 at the time Indovision - the operating company - was beginning to transition then-existing C-band Palapa customers to their new purpose built Cakrawarta S-band satellite. Through the latter half of December, into mid-January, only a handful of Cakrawarta S-band programme channels were operational. More recently, the service has shown resilience, is now back to at least the pre-C-band shut down service levels and seems to be growing again. There are legal questions remaining - Star TV Asia claims to have the final say about some of the programme channels currently carried by Indovision and there are suggestions that Indovision is operating slightly outside of the programming agreements which were in effect when Star was managing the firm.

"We thought they were out of business but they are showing considerable unexpected staying power" is how one Star TV official described the rebirth of Indovision on S-band to CTD.

Indovision is in part a reflection of the economic hard times and political instability that has swept Indonesia during the past 11 months. The firm is desperately in need of operating capital, may in fact lose some of their existing programming channels. This makes them less careful about how they sell the product, and to whom it is being sold. One satellite dealer who admits to handling Indovision satellite receivers and smart cards tells CTD, *"For the right price, you can get shipment of as many*

WHAT SIZE DISH - for reception from Cakrawarta S-Band?

Country	Size Dish	Country	Size Dish	Country	Size Dish
Australia: WA, northwest	<2m	Fiji	3m	Samoa	4m (low look angle)
Australia: WA, southwest	>3m	Guam	<2m	Solomon Islands	1.2 - 1.5m
Australia: NT	<2m	New Caledonia	2m	Tonga	3-4m
Australia: Qld	2.5m typical	New Zealand: North Island	2.5m	Vanuatu	2.5m
Australia: NSW	2.5-3m	New Zealand: South Island	3-4m	Wallis & Futuna	>2.5m
Australia: Norfolk	2.5m typical	Papua New Guinea	1.2m		
Australia: Victoria	3m+	Philippines	2-3m+		

Indovision IRDs and cards as you want to virtually anyplace you want them." For locations such as Fiji, New Caledonia, the Solomon Islands and PNG, this has turned into a temporary bonanza. None of these locations have access to any pay-TV bouquets and the sports + movies + news + general entertainment packages which we take for granted in Australia and New Zealand are simply not available.

To date the numbers have not been significant (a few hundred IRDs scattered throughout a large area) but the trend is upward and the rate of growth compounding monthly. The hardware required is identical to that currently being used by Star TV Asia - the Pace DVS-211 IRDs and smart cards which are programmed inside Indonesia for the particular S-band package on offer. Pricing jumps sharply when the IRD and card leave Indonesia - from US\$400 for the IRD inside of their home territory to more than US\$750 outside. The smart cards are even more generously marked up - inside, around US\$300 per year but outside more than US\$800.

Of course the exporting of Indovision programming is contrary to the programmer agreements Indovision has negotiated. But the circumstances have created a window of opportunity which seems to be benefiting both the seller and the buyer. For the seller, the marketplace at home is flat to worse - getting smaller by the month. For the export buyers, Indovision offers the only access to world class sport, movies, news and general entertainment. In the middle, Indonesian business people who are buying cards and IRDs at "X" and reselling them offshore for 2 and 3X pricing. The Indonesians need the money - badly, and the export located users need the programming.

Others are saying - from the April 1999 issue of Television Magazine (UK)

Ten Years of Sky

It seems almost unbelievable that Sky Television has now been in operation for just over ten years: the actual launch date was February 5th, 1989. I have to confess to being amongst those who thought it would never come off, and that Rupert Murdoch was out of his mind. People had four perfectly adequate TV channels which they received either at UHF or via cable. Who would want to rush out and buy a dish to receive four more channels from a new, upstart broadcaster? It just didn't seem to be on. But I, and many others, were wrong and Rupert Murdoch has proved to be spectacularly right. Mind you he did take a gamble, more than one in fact, and was aware of it.

He seems to have been very worried about whether the Astra satellite would make it into orbit, and whether it would work successfully if it did. And would his new broadcasting technology work? He needn't have been too worried on either of these counts, though delays could have jeopardised the project. After all there was nothing new about satellites, and satellite TV broadcasting had been proved as far back as 1975/6, with the ATS-6 satellite that provided an experimental TV service to the Indian sub-continent. That satellite, working at UHF, started the ball rolling. Though directed at Asia, from 35°E, there was sufficient off-beam signal to provide reception of sorts even in the UK.

The established broadcasters in Europe and elsewhere had been slow to take advantage of the possibilities presented by satellite transmission, though orbital and frequency allocations had been agreed at the World Administration Radio Conference

(WARC) in 1977: the 11.7-12.5GHz band was to be used for DBS (Direct Broadcast by Satellite) services in Europe. Rupert Murdoch wanted to extend his media interests to TV, but there were no terrestrial channels that he could use in the UK and he didn't, of course, have a satellite allocation. Nevertheless certain opportunities were open to him.

The WARC had allocated orbital positions to countries large and small. It was unlikely that indigenous broadcasters in smaller countries would make full use of their allocations. Luxembourg in particular represented an opportunity. It had allocations, which were in the right spot for broadcasting to Western Europe. In fact the Luxembourg government had decided to become involved with satellite broadcasting as early as 1982. By 1985 the Luxembourg-based Societe Europeenne des Satellites (Astra) had decided on a suitable satellite (the RCA 4000 type) and had signed contracts for delivery and launch. Hence Astra 1A, which would be located at 19.2°E.

What about frequencies? Well, there was the fixed satellite service (FSS) band, just below the DBS band at 10.95-11.7GHz, which was intended for fixed communications services such as the delivery of signals to cable distribution systems - and was likely to be underused. Rupert Murdoch seized the opportunity, and in June 1988 signed ten-year contracts for four Astra channels in the FSS band. It's remarkable that he got his act together in time for the February 1989 launch. The rest, as they say, is history.

But how was Murdoch to compete suc-

cessfully with the established broadcasters? With his media experience, Rupert knew what was required. Basically, sports and movies, and plenty of 'em. He set about wheeling and dealing, and built up the programming he required.

He was helped in his efforts by certain technological factors. The cable companies were happy to distribute his channels, and improvements in LNB technology made reception with small dishes possible. Everything was going his way, and once it had become established as part of the broadcasting scene Sky grew and grew. It now has over seven million subscribers, 6.5m in the UK and 576,000 in Ireland. The split between DBS and cable reception of Sky is about 50:50. Sky has proved to be highly profitable, making over £300m in 1997. There has been a sharp decline recently, because of the cost of launching digital TV services. But this seems to have been well handled - the digital subscriptions are rolling in. Once again Rupert Murdoch has revealed a flair for getting it right.

By clever marketing Sky has got the public used to the idea of paying for TV. This can be extended further, with pay-per-view operation. Now we have the digital revolution adding to Sky's prospects: lots of channels and people willing to pay for premium and special-interest programming. To this can be added interactive TV, with more scope for profitability.

The next step for Sky is to extend its operations across Europe. This will require more wheeling and dealing. It is already underway, as our news pages (Teletopics) report. There seems to be no stopping Sky, and many viewers will be thankful for this.

TECHNOLOGY BYTES

...BITS and BYTES you may have missed in the rush to make a dollar ...

April 9, 1999 ♦ VOLUME 99-3-56

Satellite TV & Radio

AsiaSat 3S status? For updates (see p. 2 here), file these numbers away. (AsiaSat) Satellite Control Centre - tel ++852-2805-6678 or ++852-2805-6677, fax ++852-2504-3871, Email scc@asiasat.com.

CNN in the Pacific is scheduled to launch a digital feed on April 22 (transponder 4C, 3780/1370Hz, Msym 25,000, FEC 3/4) which will run parallel to the analogue service now on PAS-2 (3940/1210Vt) until May 31st. After that date, there will be no more analogue service through PAS-2 nor PAS-8. The new digital service will utilise SA PowerVu with 5 programme channels (#1 - CNNI Pacific, #2-4 reserved for future use, #5 - International Newsource). Whether the PowerVu service will be conditional access is unknown at CTD press deadline but similar analogue to digital change outs for South America have started FTA digital and then gone CA shortly after start up. Since early March, CNNI has been transmitting an analogue feed parallel to the PAS-2 service on the same PAS-8 frequency (3780 Hz) and the assumption is this analogue service will terminate on April 22 when the new digital service begins. Technical assistance from Vincent Luk, Senior Satellite Engineer at CNN Hong Kong (tel ++852-2826-4518, fax ++852-2804-6415, Email vincent.luk@turner.com).

TNT/Cartoon Network changeover from PAS-2 digital to PAS-8 digital will begin on April 22 (see above) and the PAS-2 digital feed will terminate on May 31st. The new parameters for TNT + Cartoons are 3940/1210Hz, Msym, 26,690, FEC 7/8 (SA PowerVu). This particular digital feed has been active since mid-February and there have been many technical problems with it. Note the FEC rate is 7/8. This means the threshold for the service will now be in the region of 6.0E3 rather than the more generous 3.6E2 of the present feed. The difference in signal level between the two FEC rates for threshold service is 3.5 dB; that is, you are 3.5 dB closer to threshold with the FEC 7/8 rate than you are with the present FEC 2/3 rate (see SatFACTS April 15th for detailed discussion). In many cases, a larger satellite antenna will be required for continued above threshold (+ overhead margin) service from TNT/Cartoons.

CMT in advising affiliates of their plans to switch from free to air to conditional access July 1 is offering Scientific Atlanta D9223 receiver at US\$1,295 plus US\$150 air freight or SA D9225 at US\$995 + \$150 air freight. Contact is Tracy McKinley at CMT Sydney (tel 00-61-2-9460-8055, fax 00-61-2-9460-8066, Email tracy@cmtv.com.au). CMT will test their encryption system "late in April or early in May" and all affiliates will be notified in advance.

JET-TV, Japan originated, Singapore based English and Chinese language export TV service based upon original Japanese programming, is closing down. The service advised affiliates of the decision late in March, terminated most feeds April 1 over four satellites in Asia + Pacific region, apparently will continue to provide service to only Taiwan cable companies. JET-TV attempted to turn made-for-Japan product into made-for-export TV, dubbing original Japanese programming into English, Chinese (Mandarin). It was an expensive service to produce, typically cost cable operators in region of US\$0.50 per subscriber per month and was significantly marked up by some DTH operators (Indovision for example charged a premium US\$15 per month for the service). The only affiliate in New Zealand was Far North Cable TV Ltd., none in Australia.

Orion 3 The launch was scrubbed April 6 (Pacific time) as Loral Orion held a 3 hour "Launch Party Brunch" in Singapore where the live launch was to be displayed on television monitors for invited guests. Orion 3 is headed for 139E, after several launch schedule delays, where it will provide both extended C-band (3.4-3.7 GHz) and Ku band service for the Pacific and Asia. April 6th launch was called after launch window expired during which virtually everything that could go wrong did - a tug boat in the ocean where the rocket might have landed if it failed to launch properly, the wind blowing in the wrong direction carrying launch fumes over populated areas, extensive metal fatigue to Atlas launch vehicle vents. It was scheduled to try again April 7. The most interesting aspect of this new satellite is its ability to cover virtually all of Australia, New Zealand and the Pacific with a 1.2 - 1.5m Ku band signal giving it the potential to provide both small dish Internet as well as DTH television services for the first time to the complete region. Additional information from Sharon Tan at tel ++65-250-8484, fax ++65-250-8481.

InSat 2E appears to have been launched successfully (April 2, 22:03 UTC). Satellite is heading for 83E, has 17 C-band transponders on board.

Telekom 1, replacement Indonesian C + Ku band satellite to go to 108E, now has Ariane launch window of June 12-20. It will replace B2R at that location, could turn out to be important source for new programming given the technical and management problems currently besetting Palapa.

Chinasat 8 (Long March launcher) now delayed to "late summer"; Ku + C to 115.5E.

"Live" views from satellites. Try www.realitygames.com/i76/tandy for list of satellites, select one (such as As3S) and up on screen comes the visual view of earth from that satellite's location.

Imparja TV will "turn on" homes for the Central 7 and Imparja 9+10 combined Aurora services without respect to their locations. However, each home that is located outside of Australian regions designated for Imparja + Central 7 will have to go through extensive qualification process before gaining access to Aurora packages. Details in SatFACTS Monthly, April 15th.

Ku band service from PAS-8. Now operating is test at 12.606 Hz linking California to Australia (Internet trial). Earlier tests found 18 dB C/N in Western Australia whereas PAS-2 Ku GWN service measures only 10.5 dB on same system.

Ku band testing for Australia. Hutchison Telecom has reported tests they conducted on March 25 and 26 using the PanAmSat 8 Australia Ku band beam downlink and the West Coast USA return beam were successful. Hutchison is trialling a competitive 'USA Direct' satellite ISP service with the server effectively being in the USA. The undisclosed new technology / software reduces the normal 'turn around' time delay for the double hopping handshake by 50%, with the handshaking effectively handled by some form of phantom proxy server located in California. Billing and control apparently are transparent and will occur from Australia. Aside: The test should put to rest fears that the PAS-8 return link beam connecting Australia to the USA is not functional, contrary to many industry rumours.

Loral / Orion have signed agreement with Ozemail involving a 45 Megabit per second receive only link to Australia from the United States. Ozemail presently leases undersea fibre optic capacity for its inward bound Internet link.

PAS-8 Ku analogue test card, appearing intermittently on 12.446Hz, has been seen on 7m dish in Indonesia, barely above noise level. The same test card was reported, briefly, in SE Australia as well.

PanAmSat 'Antenna 8 Program' which is providing up to 3,000 dishes from 3.1 to over 5m in size is presenting some challenges. In New Zealand, the size of the dish is determined largely by the weakest signals reaching New Zealand from PAS-2 while at the opposite side of the footprints, the weaker signals will come from PAS-8. Many sites which had originally been scheduled for 3.1 and 3.8 size antennas are being upgraded to 4.5 and 5m size dishes. The original calculations for PNG, for example, called for 3.8m antennas - now PanAmSat is saying the 5m antenna option will be the smallest that is likely to work properly when both satellites are taken from the single parabolic reflector (see detailed report in SatFACTS Monthly, April 15).

Sony will begin distribution of new DBS receiver with IEEE-1394 "fire wall" connections in May to allow Japanese DTH operator SkyPerfectTV! to download CD quality music and videos directly to consumer recorders. New "MusicLink" channel through DBS IRD and MiniDisc deck will actually sell directly to consumers the latest music as well as catalogue standards. Consumers will select music they wish to record, use on screen menu to activate MD recorder which through DBS IRD places order and accepts payment. Sony believes it can sell music at a lower cost per CD in this manner, and guarantee same day as music release delivery. CDs in Japan typically sell in range of US\$17 up. One advantage to new system - consumers can select specific cuts on CDs and pay only for the cuts they wish, in effect allowing customising of CD quality music libraries. The DST-MS9 SkyPerfectTV! IRD is US\$430, the MDS-DL1 deck will be priced near US\$500.

Korean export television is scheduled to begin on newly launched AsiaSat 3S on August 12 with test broadcasts on an irregular basis from June 1st. Arirang TV is a product from a consortium of cable and broadcasting firms, will include Chinese and English subtitles in digital format. Korean programming has been "missing" from the Asia-Pacific television scene. Contact is Scott Lee at tel ++822-3475-5150, fax ++822-3475-5306 or Email tosolee.www.arirang.co.kr.

Keeping the lid on. Star TV Asia is playing it close to the vest as it prepares to offer greatly expanded pay TV package via AsiaSat 3S when it goes into operation (early May is Star's announced transition date). Star's present free to air analogue services including Star World will be shut down just before or simultaneous to the switch over from As1 to As3S, which means Pacific area viewers will have either no opportunity or a very (very!) short opportunity to see these unencrypted packages. As recently as mid-March, Star was suggesting their As3S service package would be in the region of 18 channels at an undecided price. By early April, the size of the package as leaked out of Star's Hong Kong facility was past 30 channels and still growing. The areas in Asia where the service will be on offer is also still not announced; Hong Kong is an attractive target but the local regulations there still prevent wide scale implementation of service. Star has been lobbying Hong Kong officials hoping to have the regulations changed, allowing the city's thousands of SMATV systems the opportunity to become Star TV subscribers but this appears unlikely to happen much before September of this year.

Ethnic Australian broadcaster. In addition to those sources mentioned in our feature report at the front of this issue, add one more. This group is the successor to Galaxy's MMDS service which operated in the primary population centres throughout Australia. They purchased the ex-Galaxy MMDS equipment and licences, have been quietly planning to reactivate with a new line-up made up primarily from ethnic services. They have also announced a plan to distribute using PAS-8 Ku band into Australia. Some details - the MMDS and satellite services will run parallel, MMDS will cost A\$250 for installation, satellite \$800. Base price is to be A\$29.95 which will include one non-English channel plus a small quantity of English language services (including Fashion TV, CNNI, Cartoon Network, TNT). The foreign (ethnic) services to be offered are still in negotiation but are said to include TV National Chile, Cantonese and Mandarin Chinese channels (2 total), a Filipino service, a Portuguese service (said not to be RTPi), a Spanish channel (said not to be RTVE), plus a Greek, Lebanese, Arabic, TelItalia from Italy and others not yet announced. This service has been rumoured for some months, may be getting closer to actually happening but at this stage there is still no "formal" announcement from the service provider.

10m dish purchased in Brisbane for use at Norfolk Island to receive ABC, SBS services there may turn out to be a major problem. The dish, from photos viewed by CTD, has damage, a major mount piece appears to be missing, and the dish was apparently designed for terrestrial, not satellite reception. Norfolk Community Council had attempted to get assistance first from Optus, later from ABC to determine the dish size required to retain their present link with mainland Australia. B-MAC analogue services for ABC and SBS will be shut down by midyear, the new digital service signals could not be properly measured by engineers sent to Norfolk last spring. Indications from northern New Zealand and New Caledonia are that the Aurora package signals containing ABC, SBS et al are in fact very erratic in coverage and the correct answer may turn out to be that no reasonable size dish will do the job required. Optus has never provided detailed analysis of the Aurora coverage pattern beyond shoreline of Australia, possibly because they know it to be very poor or simply do not know what happens to it in region of Norfolk.

Taiwan radio services in 3760/1390Hz bouquet are back in clear again - 12 TV channels remain CA. Changes in the TV line-up include Star-Winged as replacement for Sun Movies, addition of Adult Channel and Cha Chan Channel.

AFRTS Radio Pacific is now found on Intelsat 701, 180E, at 4175 LHC in PowerVu.

WorldNet on AsiaSat 2 has added MPEG-2 digital service in parallel to previous analogue service. Try 3764/1386 Hz, Msym 6.100, FEC 3/4. There is one TV channel but as many as 21 radio channels which appear as the TV channel + one or two audio channels over the 21 load to memory positions. Radio channels are VOA feeds for broadcast, short-wave transmitters throughout Asia, include Radio Liberty, Radio Free Europe, VOA Express and VOA News Now. The analogue service continues to be degraded by 2-3 dB from former peak levels (3885/1265 Hz).

TCS Singapore, which has had two identical programme channels on PAS-2 from their first day, is scheduled to replace second channel with new 18 hour per day Singapore based news channel service. Exact implementation date not announced, but "soon." Service is already operating on cable in Singapore, putting it on satellite will be a simple addition. There is no Chinese oriented all news channel currently available in the Pacific and Asia.

Herbalife. Latest new (corrected, ever changing) downlink frequency: 12,483 MHz on B3 vertical.

Seventh Day Adventist network now in quite regular use. PAS-2, 3957/1193 Hz, Msym 7.000, FEC 3/4 from 1900 - 20.30 UTC on transmission days. Like the WorldNet feed, there are 16 different language feeds each with their own PID number.

Kermit Channel. Hallmark returned to PowerVu encrypted mode March 10; they had remained FTA in various states from December as part of launch of services into India.

MCM Asia has again departed Palapa C2 3960/1190 Hz.

Singapore ST1 signals reported in Queensland - 7 digital plus strong analogue SINGNET-BKT test card on 3640/1510Hz.

ChinaStar 1 at 87.5E continues to have test card and occasional feeds on 3880/1270Hz, PAL analogue.

Thaicom 3 digital bouquet 3600/1550Hz (Msym 26.662, FEC 3/4) has Greece Skai-TV, several Indian channels in bouquet well received in eastern Australia. Skai-TV is also found on SCPC carrier at 3435/1715 Hz with Msym 3.905 and FEC 3/4.

RFO / Canal + feeds on Intelsat 180E (4095/1055L) have improved by significant 3 dB following complaints lodged with Canadian uplink operator by New Caledonia RFO station. The power level apparently had fallen off over several months, reached point where it was no longer reliable enough for RFO New Caledonia to take feeds for local terrestrial use.

RFO New Caledonia has established 90cm dish size as criteria for activating (Ku band) direct digital feed to central Pacific. No, Orion 3 is not automatic as the choice (think about it for awhile). Target date? That would be giving it away!

Still free to air? Much interest in PAS-2 "Satcom" bouquet at 3743/1407 Hz with Msym 19.465 and SR 7//8. Bouquet includes 1) LBC, 2) ART America, 3) ART Movies, 4) Jordan Satellite, 5) feeds including CNBC USA in FTA format. Bouquet is apparently on PAS-2 as link to Australian pay-TV firms who are now or will shortly deliver these services to consumers using combination of cable, MMDS and PAS-8 Ku satellite. Note: Service reverted to test cards April 1.

KIBC (AsiaSat 2, 3940/1210 Vt, Msym 26.655, FEC 2/3) has changed "PID" numbers and may require reloading if you have lost it on your IRD.

Radio Shack chain in North America has been earning US\$150 for each Primestar satellite TV system sold (as agent - Radio Shack has not actually stocked the equipment) and US\$70 commission for each DirecTV system sold.

Foxtel satellite installers in Australia have been introduced to the UEC 642 model IRD which Foxtel is in the process (this month) of converting to for new satellite installations. The 642 is the identical IRD used for the (Optus) Aurora programme. UEC's Russell Futter conducted evening "classes" to introduce the new IRD to the Foxtel contract installers the last week in March. Foxtel had an estimated inventory of 12,000 Pace DGT400 IRDs which it acquired by taking over Galaxy last June. Foxtel installers in Sydney area are being told rate of pay is A\$118 for wall mount, \$125 for facie mount, \$135 for metal roof and \$136 for tile roof - installer provides wall plate and cable.

New compression levels? Foxtel is planning expansion of present 12 programme channels per transponder to 14 programme channels, perhaps on May 1st. Foxtel is in process of adding new services and has essentially run out of transponder availability space on Optus B3 bird.

Sky Channel (Australia) digital conversion is scheduled to be completed by April 17 (began February 20). UEC 660 model IRDs have been / are being installed at an estimated 5,000 locations throughout Australia. The Sky Channel's television, radio and data services are transmitted as a part of the Aurora service package on Optus B3, vertical. There have been IRD problems - units lock up, go into constant search mode, will not correct when mains plug is pulled and restarted. Another problem - when AC mains fails, unit returns to factory default settings for parameters such as UHF modulator channel output which simply means the TV set at TAB agencies has to go "searching" for the service.

New IRD. Latest gee-whiz toy for satellite engineers and enthusiasts is Korean receiver which processes analogue and digital FTA signals, includes common interface conditional access module, and reportedly does complete L-band (IF) frequency search to locate all SCPC and MCPC services transmitting. Unlike present IRDs, this one does not need to know the frequency, Msym or FEC of any of the transmitting services - it conducts totally automatic search after entering "start" point (such as 950 MHz) and "end" point (such as 1450 MHz). Unit is currently being tested in Australia, is scheduled for commercial release in May, has CE (safety test) approval. It has been possible, utilising Dr Overflow software created in Germany and distributed on Internet, to do similar searches with some Nokia brand models but only with an extensive personal computer attached to the IRD running the special software. A similar Korean IRD was demonstrated last October, but it required a very long time to complete the full search routine - this one claims to be able to search a full satellite in less than 15 minutes time. Details in SatFACTS Monthly for May 15th.

Phoenix 333 user hint. Load all channels worth viewing under "Favourite" memory. This speeds up changing channels, Favourite memory also stores positioner instructions, radio only channels. Otherwise, you have to select satellite (step one), then select channel to view (step two) which requires much longer transition time between selections.

Prosat Digital Satellite Receivers which unfortunately do not have an easy time with NTSC / PowerVu broadcasts (they end up in black and white) are reported to be ready for a software upgrade that does allow in-IRD standards conversion.

Another worry? Scientific Atlanta D92XX series IRDs have internal clock which when date is brought up on screen reads year in two ('99) rather than four (1999) digits. Is there something - *anything* about the IRDs which will cause Y2K problems at the end of this year? Queries to SA to date have brought no response.

BSkyB passed 350,000 digital customers at end of January, considerably ahead of projections and heading for 1 million by October this year. Two-thirds of these are conversions from analogue, balance new to satellite with digital. BSkyB based upon population is not the fastest growing satellite TV delivery service in world: surprise, Sky NZ would be!

News Corp will not be purchasing 80% interest in Italian Stream ApA pay-TV operation. Decision came when Italian government turned back News Corp's US\$1.2 billion bid for pay-TV rights to Italian soccer broadcasts which News saw as cornerstone to driving growth of pay-TV.

BSkyB and France's Canal Plus admit they have had meetings to explore merger.

Echostar, North American DBS operator, added 103,000 new subscribers during February, now claims 2.1 million homes served. However, financial losses in last quarter of 1998 grew to US\$111 million from US\$71

Foxtel Solutions to DGT400 IRD Channel Lineup Problems

Some of the more common problems Foxtel installers are experiencing with the original Galaxy DGT400 IRDs include:

- 1) ENP not available when they should be available
- 2) The channel line up does not match that listed on the inside back cover of the FOXTEL magazine even if users have tried the self-help instructions on that page
- 3) One or more channels are scrambled (E10 or E23 message) even though Wizard shows that these channels are authorised to be viewed.

Follow the procedure below to rectify.

STEP 1. Initialise Smartcard and wait for hit on Smartcard

Confirm the Smartcard number with the customer and have them reinsert the Smartcard into the unit. The Smartcard number must be correct on the account for this process to work.

Customer Action:

Press Menu

Press '3' information

Press '2' CA Status. Ask customer to keep a close eye on the line starting with "Status 1."
This line will be blank, but ask customer to advise you when numbers appear on the line.

(Note: This may take up to 3 minutes.)

Complete E.C. action below and then move to Step 2.

E.C. Action:

In Wizard account: F6 EQP cursor down the line of the Smartcard affected, then
F3 Special Equip Actions and press ENTER (twice)

(At the bottom of the Wizard screen the message "Initialise delivered for converter
XXXXXXXXXXXX" should be displayed.)

STEP 2. Remove/Reinsert Smartcard.

Customer action:

Ask the customer to advise when the numbers are shown on the Status 1 line on their TV screen.

Press MENU and select a viewable FOXTEL channel (not TVSN)

Remove the Smartcard from STU until "E04 Please insert Smartcard" is shown on screen

Reinsert the Smartcard correctly into the STU (the picture should return)

STEP 3. Complete Channel re-organisation.

Customer action:

Press MENU

Press '5' Channel Organisation

Press '3' Reset TV Channels

Press 'SELECT' (Message at bottom of screen should state: "TV Channel list has been reset")

Press MENU (customer should now be in normal viewing mode)

Step 4. Test for successful completion

Customer action:

All steps are now complete, ask the customer to change channels with their FOXTEL remote control and check channel line up.

If the above process fails to rectify the problem of missing channels, request Team Leader
Email the account details and Smartcard number to "Helpdesk (Melb)".

million in same quarter of 1997. EchoStar has been selling complete home DISH systems for US\$249 and reimbursing consumers for the full purchase price provided they sign a contract to take the US\$48.89 programming package for a period of one year. The firm added 331,000 new subscribers in the 4th quarter using this sales tactic which explains US\$82,419,000 of the loss.

Eutelsat II F4 satellite (7E) went berserk during "routine adjustment" March 31. The satellite rotated on its axis and stopped pointing at the sun. Controllers were able to bring the satellite back into proper operation 5.5 hours later.

GE-3, North American satellite, lost gyroscope control of the satellite for approximately 5 hours March 12th. The satellite tilted away from its earth boresight and traffic (American PBS network, others) was shifted to backup satellites while controllers got the attention of the satellite and commanded it to repoint back at earth.

Monica Lewinsky interview created by American ABC network was purposefully kept off of international satellite feeds because, ABC reported, it was prohibited by contractual agreements from distributing the interview outside of USA. The turn off was not perfect - an estimated 750,000 C-band subscribers to ABC and other programming services also lost the transmission which ABC said "*was regrettable but because the C-band signals do overflow the US borders was necessary.*" Those news show excerpts you did see - came on encrypted special feeds set up to go only to paying customers outside of USA.

Auckland University's extensive satellite programme retrieval project, Unisat, now has web site which can be accessed by those outside of the facility. Try www.auckland.ac.nz/Unisat (note capital U) for scheduling information of programme sources - the only such accurate listing for programming available in the Pacific.

SPRSCS '99 Conference, held at Far North Cable TV (New Zealand) was dampened by medical emergency which struck Tele-Satellite magazine's Christian Mass ("Dr Dish"). Mass was in transit from home in Holland to New Zealand, changing planes in Seoul, Korea when struck by heart attack. He was held in Korea under doctor's care for two days, then returned to Holland where he reports "*I have had a warning that I must slow down and change some of my lifestyle habits.*" Conference with assistance of TV5 production crew produced more than 6 hours of original video taped material which will be edited and shown on new SPACE Pacific Reports television programme (through Filipino KIBC, AsiaSat 2 and over similar hook-up in Europe/Africa) during next 90 days.

Digital TV & Radio

First digital TV sets going into US consumer homes are not without faults. Mitsubishi switchable 4:3 / 16:9 sets are reported to have major fringing (edges accentuated) after being used for several hours. Sony 34" digital sets apparently shut down totally when told to switch from digital to analogue or the return, must be powered down and restarted. Midwestern USA retailer told trade press, "*It's been very bumpy for everybody and there have been problems across the board. But, manufacturers are addressing them.*" Other problems - retailers demonstrating DTV sets have found they must (as in MUST!) install quality rooftop aerial to get clean enough signal for DTV sets to perform. One retailer who had done this told trade press, "*There has been a great deal of aerial, transmission line, signal splitter tweaking to make it work. And even then it does not always work as it should.*" Equal or greater problems - consumers purchasing DTV sets are very unlikely to haul them home and make them work. "*We are finding that we must almost insist they agree to retrofit their existing rooftop aerial if they want DTV reception to be as good as it can be under the correct circumstances.*"

Five major CE firms, Hitachi, IBM, NEC, Pioneer and Sony, have agreed to merge their independent efforts to formulate "digital watermarking" standard to place copyright signature on digital video including movies. The plan is to have a right's owner identification imbedded inside of the data stream such that it cannot be erased or modified. The "watermark" would appear on all original digital masters, stay with any duplications or dubs and be quickly checked for authenticity in cases of suspected copyright violation. The five party group is calling their effort (the) Galaxy Group.

Audio copyright protection, especially as it relates to distribution of new and catalogue music releases through Internet, is coming a step closer. Nine firms with stake in future of digital music distribution have agreed to basic authoring system. Hardware makers IBM, Intel, Matsushita and Toshiba have joined with music firms BMI, EMI, Sony Music, Universal Music and Warner Music by favouring a new copyright system that allows an audio CD to be copied in its digital format one time and one time only per recorder. System, like video format reported just above, will use "watermarking" data stream which identifies the origin of any music work and actually traces how and when it was copied retaining this information on each copy made. The downside of the tracking system is the possibility that artefacts of the watermarking could appear in music tracks proper creating degraded copy from master. The principal is that DVD-Audio discs will be encrypted to prevent unauthorised access to music content and only DVD players equipped with the correct decryption technology will be able to play the discs. After first and only digital copy is made, the system would allow the content owner to include provision for making additional copies through proactive licensing arrangement. Concept is that user can buy disc, play on suitable player and make one copy; can connect player to telephone line modem and then seek content owner permission (for a fee) to make additional copies.

Sony in move to make transition from analogue to digital less complicated has announced its 1/2" SDTV-format VCRs as well as future HDTV format VCRs will be backwards compatible and will also play analogue recorded tapes. Model DSR-2000 VTR will play all professional and consumer video formats.

Streaming video - the sending of action pictures and companion sound through Internet connections, is expected to grow into major new "broadcasting" industry within five years according to USA networks already operating there. A recent *Victoria's Secret* fashion show drew 1.5 million viewers to special site established for the event. The key to ultimate success will be the ability of software to make real time, full motion video possible using standard Internet modem connections. Forecasters believe this to be 3 to 5 years into the future. Existing audio quality already rivals popular (FM) radio stations and indeed hundreds of radio broadcasters currently make available their full programming schedules to Internet real audio circuits. Largest present streaming video provider appears to be Broadcast.com which claims it has carried more than 16,000 events over network since launch in mid 1995. Other firms with good numbers include Intervu and RealNetworks.

HBO, pioneer movies via satellite firm in USA, has launched HDTV version with Titanic blockbuster scheduled for April 10 showing. Alas, there are problems. Although HBO has 24 HDTV films scheduled for March-April, the service will be primarily a test with only two cable affiliates carrying the service at this time.

Converting TV stations to digital. Cost is increasingly causing concern amongst smaller market TV stations in USA where it is now likely that equipping a local TV station to pass through network generated digital (DTV) services will cost stations more than US\$1 million. For full conversion to digital, minimum figures are now estimated to be US\$3.5 million. In marketplace, smaller city stations typically have annual budget for new capital expenditures in region of US\$250,000 which makes conversion from analogue to digital a much longer project than had been originally envisioned. Present FCC regulations require all stations to be digital by November 2002: stations say more realistic deadline would be 2009. By May 1, 70 US TV stations will be transmitting in digital format, projected to rise to 140 by end of year with capability of reaching 60% of US population (with minimum of one DTV service).

MPEG-4. Not better than MPEG-2 but now in service none the less. "4" is a new protocol designed for transfer of video and other data streams using 64 kbps speed and ISDN telephone line. MPEG-4 will transfer one minute of video in real time (i.e., one minute) and is the leading edge of being able to utilise telephone connections for smooth motion video transfers. Sharp is first to have product ready for the new world format, the "Internet ViewCam." This special format camcorder uses 32 Mbyte Smart Media card to record up to 60 minutes of video. It uses Microsoft Advanced Streaming format (ASF) for recording and is a Windows compatible technique allowing near-simultaneous playback with downloading. Price of the NZ-EZ1 camcorder is around US\$500, shipments begin for Japan late in April.

Consumer Electronics

UK DVD sales went past 55,000 by the end of January. North American market now totals 1.1 million units sold to consumers. In USA, DVD players have been in short supply since Christmas season. Holiday sales were more than 200% greater than expected and the demand has continued through the end of March. Most DVD player manufacturers are now in throes of closing out 1998/1999 model year inventory and beginning shipment of 1999/2000 models - which is exacerbating the inventory problem.

PVR. Personal Video Recorder, using hard drive in place of tape, is now being sold in USA with predictions the new technology that eliminates tape as a recording medium will grow more rapidly than any other home video device to date. Projections are 14% of US households will own PVRs by 2004, rising sharply to 80% by 2009. First models allow recording of 6 to 9 hours of material with retail pricing of US\$500.

Two megapixel CCD digital still cameras proliferated at annual Photo Marketing Convention held in Las Vegas. Some of the new models will have US\$ list prices under \$1,000 for the first time with varying types of internal, smartcard and disc storage on offer.

World's smallest dictation recorder? Toshiba Voice Bar Pro DMR-SX1 is now available in Japan. Measures 2" in length, 1/8th " thick, weighs 3 ounces, using 8 Mbyte Smart Media Flash memory for 132 recording minutes. Price - US\$275.

Japanese NEC is restructuring, knocking out 15,000 jobs world-wide over 3 year period.

DIVX, proprietary DVD format, has passed 1 million discs sold mark. Open DVD discs, meanwhile, have passed 12.5 million mark. DIVX creator Circuit City is actively courting equity partners for their system including Blockbuster Video chain.

8 hour DVD (disc) will debut in September with release of six hour miniseries "The Stand" by Stephen King. Format is called DVD-18, comes on heels of DVD-14 six hour disc. DVD-18 uses both sides of disc with 9 Gbyte dual layer storage on each side while DVD-14 uses 9 Gbyte dual layer on one side and 5 Gbyte single layer on second side.

One DVD disc - two movies. Artisan Home Entertainment will offer "The Arrival" and "The Arrival II" for US\$29.98, each on one side of two sided disc.

200 disc "DVD jukebox" will be introduced by Sony in September at US\$999, 5-DVD Carousel at US\$799 in August.

Samsung has been granted patent on unique parallel recording track VHS machine that lays down standard analogue data plus new digital data stream on same tape. Concept is that this would allow stores that rent or sell movies to stock single tape containing both formats. Analogue portion would be subject to master patents held by JVC which admits several other firms have also developed parallel recording systems. Samsung also holds patents on system that records standard VHS and S-VHS on same tape in parallel tracks; this patent has never been put into hardware or offered for sale.

Universal Studios has licensed Columbia TriStar Home Video to release in international DVD market new release and catalogue films. This is likely to substantially increase the availability of film products on DVD format in markets outside of North America (so-called Region 1). The downside of this will be an end to the release of DTS (stereo audio) discs outside of the USA (through authorised channels).

MPAA claims to have seized 43 million "illegal" Video CD discs during 1998, but only 70,000 DVD discs. Video CDs are a format developed primarily for China, although the technology has allowed DVD discs to be used as "masters" to recreate in Video CD format unauthorised copies of popular North American and European films. The primary outlets for unauthorised Video CDs have been in China, Macao, Malaysia, Pakistan, Taiwan and Viet Nam. The MPAA claims to have raided and closed down 54 Video CD replicating houses in Pakistan during February. In related development, Dow Plastics is proposing that disc (CD and DVD) replicators adopt "standard" for polymers used in fabricating blank discs. Concept is that if polymers are based upon specific standard, players for CD and DVD products could then be designed to refuse to play discs made up from non-standard polymers.

US Microsoft owned Web TV claims 800,000 subscribers but also claims 2.2 users per Web TV terminal. They also claim on-line use is twice as great as average America Online subscriber. How do people use the system? 46.3% said they never use the system while watching TV, 19.2% said they watched TV and operated on-line simultaneously.

33 million US homes now have Internet access capability; 45 million homes own at least one PC. Of the 33 million with Internet, 18 million are identified as surfing Internet while simultaneously watching television. Homes with Premium Cable or satellite TV reception equipment are more likely to use Internet while watching television.

Radio Shack is offering US\$599 entry level Compaq PC at more than 1,000 stores starting this month.

Zenith (LG Electronics) is introducing new Allegro VCR brand with 2 head model listing at US\$79, 4 head mono at US\$99. Just one year ago, Zenith was offering two head model at US\$169.

Next Sony Playstation will use 128 bit CPU and contain DVD-ROM drive. Sony claims the processing machine is more powerful than Pentium 3, "*will overshadow anything available today.*" New system will have backwards compatibility to play all existing Playstation games as well as new, advanced games designed to take advantage of greatly increasing processing capabilities. Timeline - before March 2000 in Japan, October in Europe and North America. Price target - US\$400 initially.

Nintendo, not to be outdone, has revealed the next generation of their game console will not utilise "game cartridges" but firm refuses to disclose the technique to be used further.

cybershop.com is offering current Sony Playstation and Nintendo 64 players at US\$99 each. Both carry US\$129 at retail level.

Sony plans to move into sales of insurance and securities using Internet web sites established for this purpose. Firm is readying trial of services in October in Japan, believes it can be profitable because there will be no "bricks and mortar" overhead for new venture. Move into services is part of new Sony policy to expand beyond hardware and software in electronics field, a part of major restructuring the corporate profile in Japan.

Sony has announced two new improvements to video processing systems which may give firm significant near term edge in analogue TV equipment sales. Vertical Compression System improves display resolution of letter boxed DVD displays by 33%. System works by taking normally unused scan lines in receiver display under letterbox formats and putting them back to work as resolution enhancer. Reality Regenerator is new system for sharpening pixels recorded on even older VHS tapes. System attacks the noise component in video sharpness detailing system for VHS playback, unlike other sharpness systems actually reduces or eliminates the noise which normally goes hand in hand with sharpness circuits. System works on all pre-recorded tapes, affects only playback image as seen on screen.

Thomson Multimedia has gone profitable one year in advance of projections. Firm lost US\$467 in 1997, managed US\$17 profit in 1998 on US\$6.2 billion in sales. Much of the growth has been driven by digital products with a claimed 61% market share in satellite receivers and 22.9% share in DVD players.

Cable/Fibre/MMDS/Pay TV

Fiji's Videocrypt protected terrestrial pay television service is wide open to anyone who has the appropriate Videocrypt decoder and a card. Individual cards do not have to be authorised, similar to the interim PNG

EMTV encryption package previously available via satellite. Fiji Television, minority owned by NZ TVNZ, has three operating channels (all VHF), one of which is FTA and two of which are supposed to be pay-TV. The Videocrypt decoders and cards were originally used by Sky NZ's analogue service, have been onsold to Fiji.

Korean based Telemann Co. Ltd. is supplying CAS (Controlled Access System / Access Gate) hardware and software to IHUG in New Zealand. The equipment allows the combining of television programming as well as Internet feeds at higher speeds than telephone modems are capable of, will be used for the IHUG terrestrial 12 GHz service that has been in a test mode from the Auckland Sky Tower. IHUG is one of the first firms to actually place the Telemann system into operation. The Digital Satellite STB (set top box) models DTR5000N, DTR4000CA and the PC card IRD (SkyMedia -200) are now being trialled in New Zealand. IHUG has signed programming agreements with several suppliers (including TNT/Cartoons, Discovery, CNN) and hopes to make a similar TV + Internet service available through PAS-2 Ku service before the end of 1999. You can visit the Telemann web site (www.telemann.com) to learn more about the hardware being used by IHUG.

Sydney Morning Herald for Monday April 5 carried headline in business section, "*News urges Telstra out of Foxtel.*" Paper, published by News Corp. reports "*battle brewing*" between Telstra and Foxtel over how the company is being operated. Citing a report appearing in The Weekend Australian (another News publication), the story relates disputes about Telstra's "veto power" over programming content of Foxtel (cable and satellite) and Telstra's "*control of the critical set-top boxes*" is the cause of the disagreements. Telstra has been trying to work out an agreement with Microsoft for the introduction of the Foxtel Web TV product. Microsoft has already entered into business arrangement with Nine Network for use of a similar product as a part of the Nine terrestrial TV package. In February, Nine and News teamed up to sink A\$700 million in equity funding for a money losing start-up firm calling itself one.tel, seen as a viable competitor to Telstra for the Internet and data delivery markets in Australia. Foxtel has a current market value of A\$1.5 billion, but is heading for profitability within 18 months and the values will certainly rise from that point. Foxtel is presently 50% owned by Telstra, 25% each by News Corp and PBL (Nine Network).

Regional pay-TV player Astar is exploring raising A\$400 million through a public float within Australia. Parent firm UIH recently offered 1/3rd equity stock in a European subsidiary, raised US\$1.2 billion in an offering that was over subscribed by twenty times. Austar believes it will be profitable, before interest, tax, depreciation and amortisation, by the third quarter of this year.

FCC has approved US\$48 billion merger between AT&T and cable giant TCI. American On Line and other Internet service providers had sought ruling governing equal access to TCI cable plants for on-line service providers as condition to merger; failed. The rough spots are ahead according to analysts who cite totally different management and operational styles between two firms - "*Oil and vinegar*" according to one report. AT&T is heavily unionised, TCI is not. AT&T employees function through democratic decision making process, TCI through top down rulings.

Next megamerger - Third largest US cable MSO, Comcast, is acquiring assets of number 4 MSO MediaOne for US\$48.7 billion in stock and assumption of US\$11 billion in debt. Comcast with acquisition tightens race for being largest MSO with AT&T (formerly TCI) still leading at 12.4 million subscribers, Time Warner at 12 million and new Comcast at 11 million.

Where there is cable competition. Detroit News (newspaper) in survey of 66 communities where there are two operating cable firms, in direct competition to one another, found rate of cable monthly charge increases was 8% whereas in neighbouring systems with no competition, 12%. Telecom Act required cable systems to maintain rate increases with cost of living increases. This requirement terminated April 1 and cable firms are now free to adjust rates as they wish without federal oversight.

Terrestrial Broadcasting

Male versus female imbalance. Oprah Winfrey's planned Oxygen Media network for women hopes to correct what they perceive to be an imbalance between the sexes in media programming availability. "*There are 55 cable networks for men, 5 for children but only one for women*" they reported. "*70 percent of the advertising budgets target men, while 70% of the purchases are made by women.*" The network is scheduled to launch in analogue format in the first quarter of 2000.

Think about this. (US) National Rural Telecom Co-op President Bob Phillips is urging Congress to require television broadcasters who do not serve every home in their designated market areas (DMA) to provide homes that cannot receive their signal with a satellite dish installation. At no charge to the consumer. His reasoning is the DMA is a monopoly, into which no other broadcaster affiliated with the same network may encroach. So if the TV stations have a monopoly of service, but in fact do not provide that service (because of weak signals, terrain blockage, interference), the stations should be required to pay for a substitute delivery mechanism (satellite).

USA TV networks NBC and CBS are threatening affiliates they may "go to cable television for distribution." Networks are under intense pressure to once again be profitable, and the now 50 year model which has networks paying stations for carrying their programmes appears to be coming to an end. Newer network WB is paid by affiliates for programming. Networks are faced with huge costs for HDTV (digital) conversion, annual reductions in audience size as cable becomes more important advertising medium. The three major networks (ABC, CBS and NBC) combined earned less profit for their operations in most recent fiscal year than any of the top 10 cable TV MSO groups.

Conflicts between existing terrestrial TV analogue channels and those proposed in Australia for use by new digital services scheduled in 2001. Most new digital channels are one removed from their analogue counterpart - i.e., Sydney channel 7 will occupy channel 6 for digital transmissions. What may have been missed is network of translators that already work in analogue mode on adjacent channels, especially in regional markets. The adjacent channel analogue devices often feed one to another in relay fashion, and with digital transmissions attempting to occupy the same frequency spectrum space there are rising concerns about the viability of the digital channelling plan in Australia.

Japanese Fujitsu Web TV has begun marketing US\$450 range set-top box. The Internet-access TV terminal has sales goal of 50,000 units in first 12 months.

Low Power FM (LPFM) proposal before US FCC has several novel twists. Under pressure from pirate operators across America and public interest minority groups, FCC is proposing to establish new micro or mini power FM radio station service (typically 1 to 10 watts EIRP) to allow new "neighbourhood" stations to operate with essentially no license after registration of their intent. One of the more novel proposals calls for reducing the bandwidth of these low power stations from standard 200 kHz to 100 kHz as way to squeeze more of them into dial in each market. In theory, dozens of stations could operate on same assigned frequency in city the size of Chicago or Los Angeles, protected by distance and terrain with "several square block" service areas rather than entire markets. What is not known is how existing FM receivers would deal with half-bandwidth FM signals; general engineering response is, "*There will be major problems.*"

7 Network Australia will receive NAB's 1999 International Broadcaster Excellence Award at April 21 dinner during NAB show in Las Vegas.

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